

Elements

A pure substance that cannot be broken down into simpler substances by chemical or physical means.

Listed on a periodic table.

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra																

Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lw

US National Research Council, 1980		Elements of major concern		Radioactive Elements
		Elements of moderate concern		Elements of concern, but with negligible concentration
		Elements of minor concern		Elements of no immediate concern
US Clean Air Amendments Act, 1990				Australian National Pollutant Inventory, 1998

Pure Substance

Contains only one type of particle or atom

Example Gold only contains gold atoms

Oxygen only contains oxygen atoms



Properties of Elements

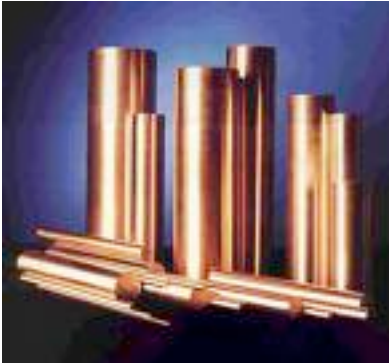
Contains both physical (like melting point and density) and chemical (like reactivity and flammability)

ELEMENTS MAY SHARE SOME PROPERTIES, BUT THEY NEVER SHARE ALL OF THEM. A LIST OF PROPERTIES IS UNIQUE TO ONE ELEMENT.

To identify an element you must look at **all of the properties**

Classifying Elements

Metals – shiny (light reflects), good thermal conductors, malleable, ductile



Copper



Tin

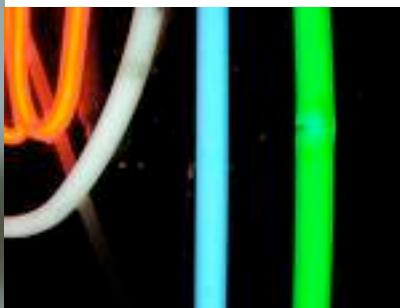


Lead

Nonmetals- dull, poor conductors, brittle (easily broken)
Few familiar things are nonmetals



Sulfur



Neon

Metalloids- contain properties of both metals and
Nonmetals

Ex. Some are shiny and are poor thermal
conductors and some are dull and good
thermal conductors



Silicon